

Substitute Specification

Approved for Entry

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BS

BULK ACOUSTIC WAVE RESONATOR AND CIRCUIT COMPRISING SAME

## TECHNICAL FIELD

This patent application describes a resonator operating with bulk acoustic waves  
5 (or FBAR, Thin Film Bulk Acoustic Wave Resonator), also known as BAW resonator  
(Bulk Acoustic Wave Resonator), as well as a circuit constructed of such resonators.

## BACKGROUND

BAW resonators are suitable, in particular, for band-pass high-frequency filters in  
10 modern filter technology, and can be used, for example, in mobile communication  
devices.

A resonator operating with bulk acoustic waves has a piezoelectric layer that is  
disposed between two metal layers (electrodes). A sequence of layers can also be used  
15 instead of only one piezoelectric layer. The layers are deposited consecutively on a  
substrate and structured into resonators, that are electrically connected to one another and  
together can constitute, for example, a filter circuit especially a band-pass filter. Such a  
band-pass filter can also be used together with another filter in a duplexer.

20 Figure 1 shows the equivalent circuit diagram of a BAW resonator. Outside a  
frequency range surrounding the resonant frequency, the resonator is characterized by a  
static capacitor  $C_0$  and, in proximity to the resonant frequency, by the series connection of